In the Claims

Applicants submit a new complete claim set below showing marked up claims with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

1. (Original) An electrophysiology catheter comprising:

a handle having a distal end and a proximal end, the handle including an actuator;

a flexible shaft having a proximal end and a distal end and a longitudinal axis that extends along a length of the shaft, the proximal end of the shaft being attached to the distal end of the handle;

a tip assembly having a proximal end and a distal end, the proximal end of the tip assembly being attached to the distal end of the shaft, and the tip assembly including a wire formed of a superelastic material and shaped to bias the tip assembly in a first orientation; and

a cable, attached to the actuator and the tip assembly, that extends through the shaft, the cable being adapted to change an orientation of the tip assembly from the first orientation in response to movement of the actuator.

2. (Original) The electrophysiology catheter of claim 1, wherein:

the wire is shaped to bias the distal end of the tip assembly in a first orientation including an arcuately curved shape having a bias radius of curvature; and

the cable is adapted to change a radius of curvature of the distal end of the tip assembly to a radius of curvature larger than the bias radius of curvature in response to movement of the actuator.

3. (Original) The electrophysiology catheter of claim 2, wherein:

the wire has a radius of curvature smaller than or equal to a radius of curvature of the cable.

4. (Currently Amended) The electrophysiology catheter of ~~either of claims~~ claim 2 ~~or 3~~, wherein the wire is shaped to bias the distal end of the tip assembly in a first orientation including an arcuately curved shape spanning at least three hundred and sixty degrees.

5. (Original) The electrophysiology catheter of claim 1, wherein:

the wire is shaped to bias the distal end of the tip assembly in a first orientation including an arcuately curved shape having a bias radius of curvature; and

the cable is adapted to change a radius of curvature of the distal end of the tip assembly to a radius of curvature smaller than the bias radius of curvature in response to movement of the actuator.

6. (Original) The electrophysiology catheter of claim 5, wherein:

the cable has a radius of curvature smaller than or equal to a radius of curvature of the wire.

7. (Currently Amended) The electrophysiology catheter of ~~either of claims~~ claim 5 ~~or 6~~, wherein the distal end of the tip assembly curves at least three hundred and sixty degrees in response to movement of the actuator.

8. (Original) The electrophysiology catheter of claim 1, wherein:

the wire is shaped to bias the proximal end of the tip assembly in a first orientation including a bend having a bias angle of approximately ninety degrees relative to the longitudinal axis of the shaft; and

the cable is adapted to change an angle of the bend of the proximal end of the tip assembly to an angle smaller than the bias angle in response to movement of the actuator.

9. (Original) The electrophysiology catheter of claim 8, wherein:

the wire is disposed in an inner portion of the tip assembly and the cable is disposed in an outer portion of the tip assembly with respect to the angle of the bend of the proximal end of the tip assembly.

10. (Original) The electrophysiology catheter of claim 1, wherein:

the wire is shaped to bias the proximal end of the tip assembly in a first orientation including a bend having a bias angle relative to the longitudinal axis of the shaft; and

the cable is adapted to change an angle of the bend of the proximal end of the tip assembly to an angle of approximately ninety degrees relative to the longitudinal axis of the shaft in response to movement of the actuator.

11. (Original) The electrophysiology catheter of claim 10, wherein:

the wire is disposed in an outer portion of the tip assembly and the cable is disposed in an inner portion of the tip assembly with respect to the angle of the bend of the proximal end of the tip assembly.

12. (Original) The electrophysiology catheter of claim 1, wherein:

the wire is shaped to bias the distal end of the tip assembly in a linear orientation; and

the cable is adapted to deform the wire so that the wire forms arcuate curve at the distal end of the tip assembly in response to movement of the actuator.

13. (Original) The electrophysiology catheter of claim 1, wherein:

the wire is shaped to bias the proximal end of the tip assembly in a linear orientation; and

the cable is adapted to deform the wire so that the wire forms a bend of approximately ninety degrees with respect to the longitudinal axis of the tip assembly at the proximal end of the tip assembly in response to movement of the actuator.

14. (Currently Amended) The electrophysiology catheter of ~~any of claims~~ claim 1 [[-13]] , wherein the wire is formed of a nickel titanium compound.

15. (Original) The electrophysiology catheter of claim 14, wherein the wire is formed of nitinol.

16. (Original) An electrophysiology catheter comprising:

a handle having a distal end and a proximal end, the handle including an actuator;

a flexible shaft having a proximal end and a distal end and a longitudinal axis that extends along a length of the shaft, the proximal end of the shaft being attached to the distal end of the handle; and

a tip assembly having a proximal end and a distal end, the proximal end of the tip assembly being attached to the distal end of the shaft and the tip assembly including an adhesive cured in a configuration to bias the tip assembly in a first orientation.

17. (Original) The electrophysiology catheter of claim 16, wherein the first orientation includes a bend at the proximal end of the tip assembly having an angle of approximately ninety degrees relative to the longitudinal axis of the shaft.

18. (Currently Amended) The electrophysiology catheter of ~~either of claims~~ claim 16 ~~or 17~~, wherein the first orientation includes an arcuately curved shape at the distal end of the tip assembly.

19. (Original) The electrophysiology catheter of claim 16, further comprising:

a first cable, attached to the actuator and the tip assembly, that extends through the shaft, the first cable being adapted to change an orientation of the tip assembly from the first orientation in response to movement of the actuator.

20. (Original) The electrophysiology catheter of claim 19, wherein:

the first orientation includes an arcuately curved shape at the distal end of the tip assembly having a bias radius of curvature; and

the first cable is adapted to change a radius of curvature of the distal end of the tip assembly to a radius of curvature larger than the bias radius of curvature in response to movement of the actuator.

21. (Original) The electrophysiology catheter of claim 20, wherein the first orientation includes an arcuately curved shape spanning at least three hundred and sixty degrees.

22. (Original) The electrophysiology catheter of claim 19, wherein:

the first orientation includes an arcuately curved shape at the distal end of the tip assembly having a bias radius of curvature; and

the first cable is adapted to change a radius of curvature of the distal end of the tip assembly to a radius of curvature smaller than the bias radius of curvature in response to movement of the actuator.

23. (Original) The electrophysiology catheter of claim 22, wherein the distal end of the tip assembly curves at least three hundred and sixty degrees in response to movement of the actuator.

24. (Original) The electrophysiology catheter of claim 20, wherein:

a second cable is adapted to change a radius of curvature of the distal end of the tip assembly to a radius of curvature smaller than the bias radius of curvature in response to movement of the actuator.

25. (Original) The electrophysiology catheter of claim 16, wherein:

the first orientation includes a bend at the proximal end of the tip assembly having a bias angle of approximately ninety degrees relative to the longitudinal axis of the shaft; and

the first cable is adapted to change an angle of the bend of the proximal end of the tip assembly to an angle smaller than the bias angle in response to movement of the actuator.

26. (Original) The electrophysiology catheter of claim 25, wherein:

the adhesive is disposed in an inner portion of the tip assembly and the first cable is disposed in an outer portion of the tip assembly with respect to the angle of the bend of the proximal end of the tip assembly.

27. (Original) The electrophysiology catheter of claim 25, further including a second cable adapted to change an angle of the bend of the proximal end of the tip assembly to an angle of approximately ninety degrees relative to the longitudinal axis of the shaft in response to movement of the actuator.

28. (Original) The electrophysiology catheter of claim 16, wherein:

the first orientation includes a bend having a bias angle relative to the longitudinal axis of the shaft; and

the first cable is adapted to change an angle of the bend of the proximal end of the tip assembly to an angle of approximately ninety degrees relative to the longitudinal axis of the shaft in response to movement of the actuator.

29. (Original) The electrophysiology catheter of claim 28, wherein:

the adhesive is disposed in an outer portion of the tip assembly and the first cable is disposed in an inner portion of the tip assembly with respect to the angle of the bend of the proximal end of the tip assembly.

30. (Original) The electrophysiology catheter of claim 16, wherein:

the first orientation includes a linear orientation along the longitudinal axis of the shaft at the distal end of the tip assembly; and

the first cable is adapted to form an arcuate curve at the distal end of the tip assembly in response to movement of the actuator.

31. (Original) The electrophysiology catheter of claim 16, wherein:

the first orientation includes a linear orientation along the longitudinal axis of the shaft at the proximal end of the tip assembly; and

the first cable is adapted to form a bend of approximately ninety degrees with respect to the longitudinal axis of the tip assembly at the proximal end of the tip assembly in response to movement of the actuator.

32. (Original) An electrophysiology catheter comprising:

a handle having a distal end and a proximal end, the handle including an actuator;

a flexible shaft having a proximal end and a distal end and a longitudinal axis that extends along a length of the shaft, the proximal end of the shaft being attached to the distal end of the handle;

a tip assembly having a proximal end and a distal end, the proximal end of the tip assembly being attached to the distal end of the shaft and the tip assembly including an adhesive cured in a configuration to support the tip assembly in a first orientation including an arcuately curved shape at the distal end of the tip assembly having a first radius of curvature;

a first cable, attached to the actuator and the tip assembly, that extends through the shaft, the first cable being adapted to change an orientation of the tip assembly from the first orientation to a second orientation including an arcuately curved shape at the distal end of the tip assembly having a second radius of curvature larger than the first radius of curvature in response to movement of the actuator; and

a second cable, attached to the actuator and the tip assembly, that extends through the shaft, the second cable being adapted to change the orientation of the tip assembly from the second orientation to the first orientation in response to movement of the actuator.

33. (Original) An electrophysiology catheter comprising:

a handle having a distal end and a proximal end, the handle including an actuator;

a flexible shaft having a proximal end and a distal end and a longitudinal axis that extends along a length of the shaft, the proximal end of the shaft being attached to the distal end of the handle;

a tip assembly having a proximal end and a distal end, the proximal end of the tip assembly being attached to the distal end of the shaft and the tip assembly including an adhesive cured in a configuration to support the tip assembly in a first orientation including a bend at the proximal end of the tip assembly having a first angle of approximately ninety degrees relative to the longitudinal axis of the shaft;

a first cable, attached to the actuator and the tip assembly, that extends through the shaft, the first cable being adapted to change an orientation of the tip assembly from the first orientation to a second orientation including a bend at the proximal end of the tip assembly having a second angle relative to the longitudinal axis that is smaller than the first angle in response to movement of the actuator; and

a second cable, attached to the actuator and the tip assembly, that extends through the shaft, the second cable being adapted to change the orientation of the tip assembly from the second orientation to the first orientation in response to movement of the actuator.

34. (Original) The electrophysiology catheter of claim 33, wherein the first angle is approximately ninety degrees.

35. (Currently Amended) The electrophysiology catheter of ~~any of claims~~ claim 16[[-34]], wherein the adhesive is epoxy.

36. (Currently Amended) The electrophysiology catheter of ~~any of claims~~ claim 16[[-34]], wherein the adhesive is silicone.

37. (Original) A method of shaping a tip assembly of a catheter, comprising acts of:

injecting an adhesive into a lumen of the catheter that extends along the tip assembly of the catheter; and

curing the adhesive by maintaining a portion of the tip assembly of the catheter in a fixed position for a time sufficient to allow the adhesive to bias the tip assembly in a particular orientation.

38. (Original) The method of claim 37, wherein the act of curing the adhesive includes maintaining a proximal end of the tip assembly in a bent shape having an angle of approximately ninety degrees.

39. (Currently Amended) The method of ~~either of claims~~ claim 37 ~~or 38~~, wherein the act of curing the adhesive includes maintaining a distal end of the tip assembly in an arcuately curved shape.

40. (Original) The method of claim 37, wherein the act of curing the adhesive includes maintaining a portion of the tip assembly in a linear shape.

41. (Currently Amended) The method of ~~any of claims~~ claim 37[[-40]], wherein the act of injecting the adhesive includes injecting epoxy into the lumen of the catheter.

42. (Currently Amended) The method of ~~any of claims~~ claim 37[[-40]], wherein the act of injecting the adhesive includes injecting silicone into the lumen of the catheter.

43. (Currently Amended) The method of ~~any of claims~~ claim 37[[-40]], wherein the act of curing the adhesive includes heating the tip assembly of the catheter at a predetermined temperature.

44-73. Cancelled

74. (Original) A flexible shaft of a catheter device, the shaft comprising:

a catheter body having a proximal end and a distal end and a longitudinal axis that extends along a length of the catheter body; and

a channel formed of a superelastic material and shaped to bias a portion of the catheter body in a first orientation.

75-94. Cancelled

95. (Original) An electrophysiology catheter, comprising:

a handle having a distal end and a proximal end, the handle including an actuator;

a flexible shaft having a proximal end and a distal end and a longitudinal axis that extends along a length of the shaft, the proximal end of the shaft being attached to the distal end of the handle;

a tip assembly having a proximal end and a distal end, the proximal end of the tip assembly being attached to the distal end of the shaft, and the tip assembly including

a channel formed of a superelastic material and shaped to bias the tip assembly in a first orientation; and

a cable, attached to the actuator and the tip assembly and extending through the channel, the cable being adapted to change an orientation of the tip assembly from the first orientation in response to movement of the actuator.

96-101. Cancelled